

which, silicate of lime will be formed by the application of water-slaked lime to those soils which contain silicates, whilst the remaining ingredients of the decomposed rocks, as silicic acid, alkalies, oxyds of iron and aluminum, (clay,) become liberated and fit to improve the soil by their respective properties, either by their participation in the formation of the body of the soil, (clay, iron, &c.) or inasmuch as they are required as a direct nourishment for plants, (alkaline salts, silicic acid.) This chemical action of water-slaked lime takes place so much more readily, as the lime is abundantly soluble in water, and therefore capable of penetrating soils thoroughly in all directions.

Water-slaked lime should never be applied to a soil, unless the soil is perfectly dry or well drained, so that water cannot rest on it. If it is applied to a wet soil, it may in most cases occur that an action between lime and the sand in soil takes place, in consequence of which a solid compound is formed similar to hydraulic mortar, both in relation to its formation, and to its physical properties. The formation of this compound of course will prevent the beneficial influence of the lime which we expect; the texture of the soil will be injured, instead of being improved.

The quantity of water-slaked lime to be applied per acre, should be between 20 and 50 bushels, (according to the quantity of undecomposed rocks present,) and the application should be made in the fall on ploughed land, so that the lime may exercise its influence during the winter time.

The rational treatment of these soils is finally concluded by the application of a heavy dressing of common stable manure, or the turning in of green clover, as soon as the water-slaked lime has been totally converted into carbonate of lime. Stable manure, which will be converted into humus, prevents the too strongly and quickly dissolving and extracting power of the water on those substances in soil which are soluble in water, and which were formed previously by the action of the lime. The humus envelops these substances, transforms them to less soluble salts, and reserves by these means their surplus for a future time. Experience has taught us that heavy rain-showers by running off from a soil which contains a proper quantity of humus, take away only a very small quantity of soluble salts, which they extract from the soil. Humus, therefore, protects the nourishing power of a soil, without taking a direct part in it, as was formerly supposed to be the case.

In Frederick county partly, and in Washington county, we meet a soil which may generally be pronounced a stiff clayey soil. Its color is dark brown or reddish, and its particles are granules, united to each other by a clayey cement; showing the general appearance of an alluvial soil of great capacity and productiveness.

In relation to an improvement in the physical properties of these soils, the principal care must be directed to the restoration of their